Recruitment Processes Alliance: Zooplankton, and larval & juvenile fish surveys

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NOAA FISHERIES
Alaska Fisheries Science Center

Ecosystem Science Review
Juneau, Alaska
May 2-6, 2016

Presentation outline

I. What is the RPA Program?
II. Strategies to obtain ecosystem data
    - Sampling gear
    - Study regions
III. Status of ecosystem data
IV. Communication and use of ecosystem data

I. What is the RPA?

The Recruitment Processes Alliance was formed in 2011 among NOAA programs to enhance ecosystem research.

- Primary goal is to provide mechanistic understanding of the factors that influence recruitment of walleye pollock, Pacific cod, arrowtooth flounder, chinook salmon and chum salmon, focusing on factors influencing the first year of ocean life.

- Members
  - NMFS, Alaska Fisheries Science Center
    - Ecosystem Monitoring & Assessment Program (Juneau)
    - Recruitment Energetics and Coastal Assessment Program (Juneau)
    - Status of Stocks and Multispecies Assessments (Seattle)
    - Resource Ecology and Ecosystem Modeling Task (Seattle)
    - Recruitment Processes Program (Seattle)
  - OAR, Pacific Marine Environmental Laboratory (Seattle)

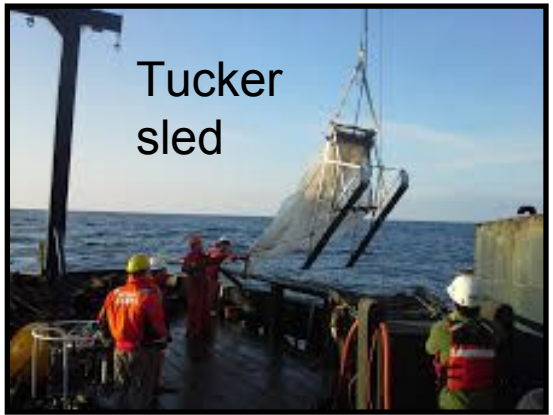
II. Strategies to obtain ecosystem data

Use various gear aboard NOAA ships and charter vessels to conduct process-oriented field studies and monitor zooplankton and larval & juvenile fishes in 3 large marine ecosystems:

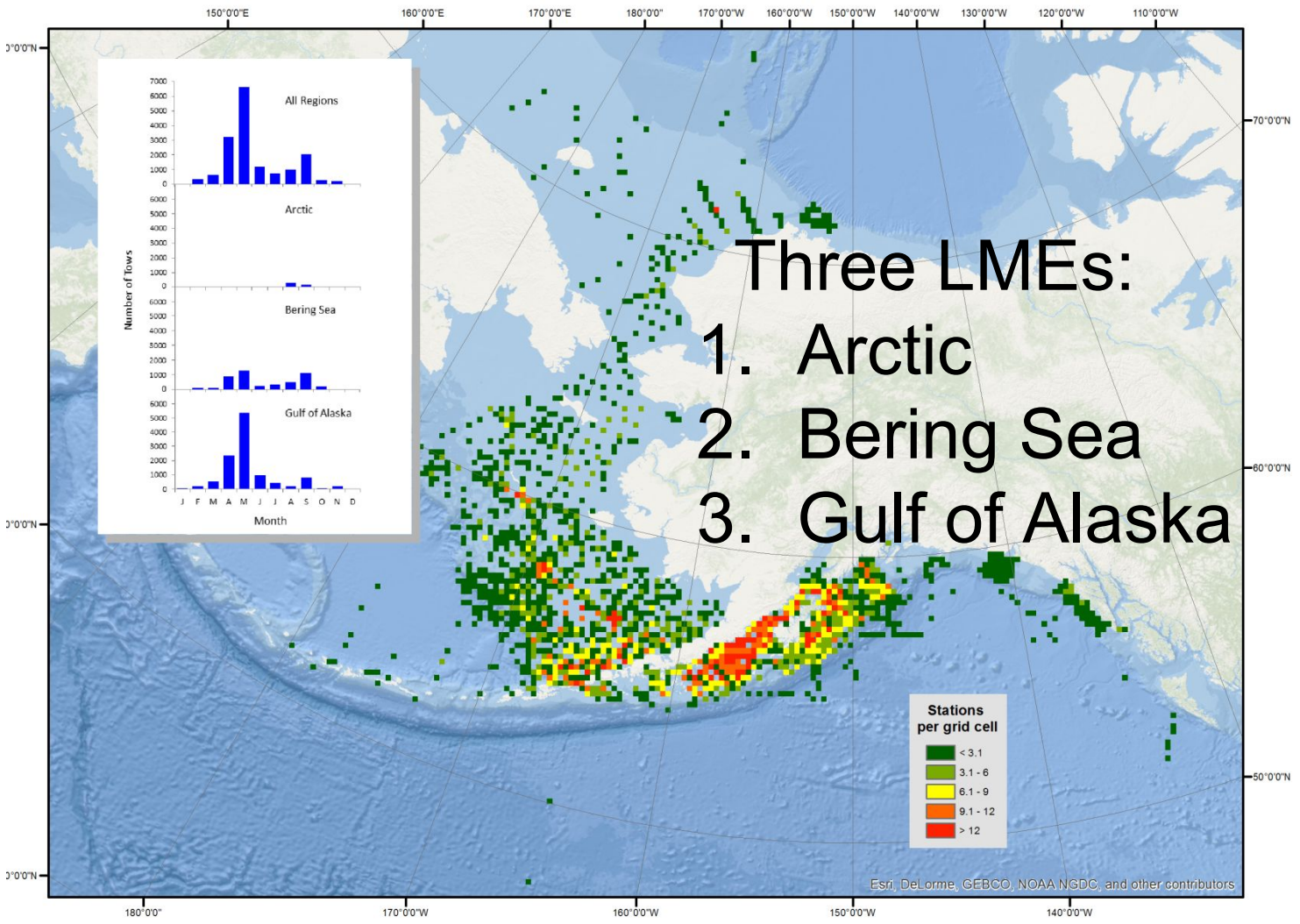
- Arctic,
- Bering Sea,
- Gulf of Alaska

Sampling gear

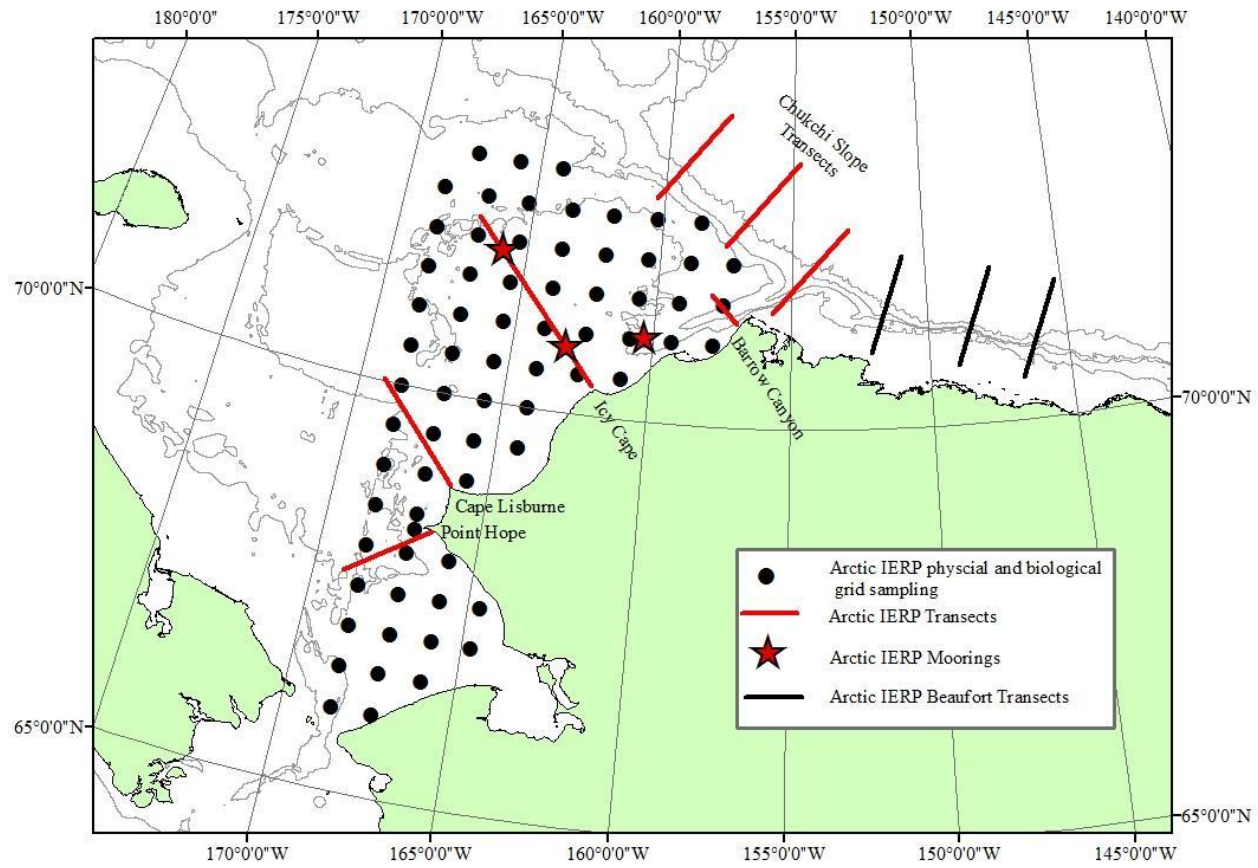
A variety of plankton nets and small-mesh trawls are used to collect zooplankton and larval & juvenile fishes.



Study regions



1a. Arctic: Integrated Eco. Res. Plan



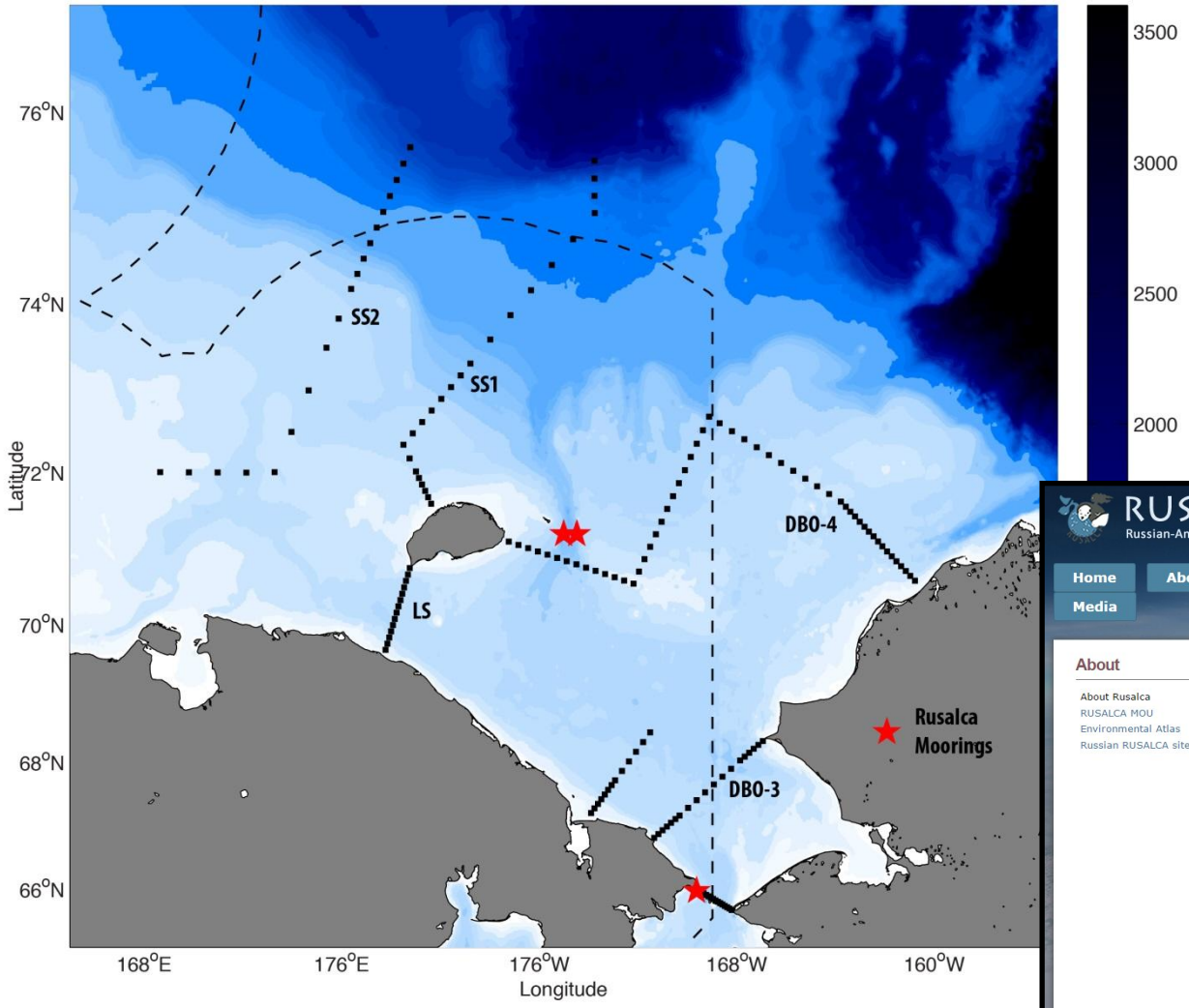
Transects

CHAOZ-X, ArcWEST
Sep-Oct 2010-'15
3 weeks, physics, zoop., & whales

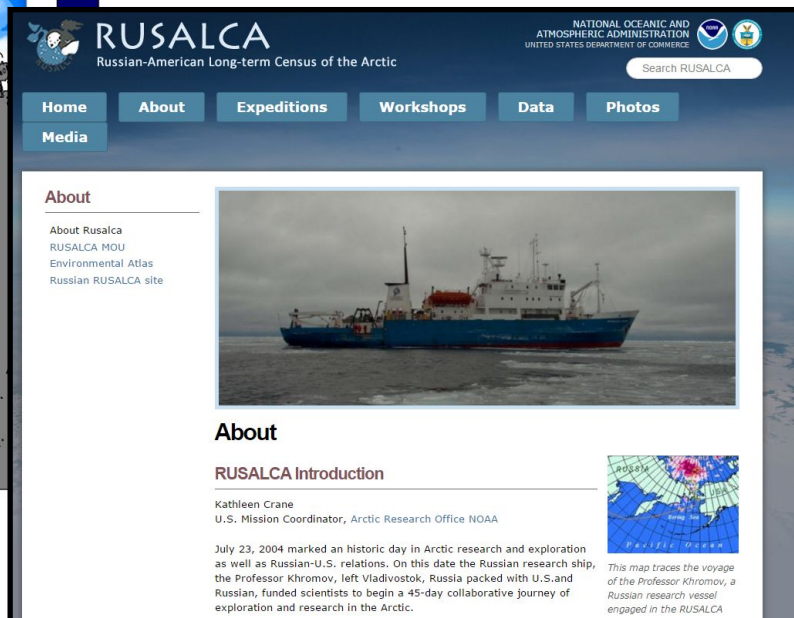
Grid

Eco. Integrated Survey
Sep 2011 & 2013, 3 weeks
physics, zoop., & fish

1b. Arctic: Russian-American Long-Term Census of the Arctic (RUSALCA)



2004-present
+5 years(?)
6 weeks
physics & zoop.



2a. Bering Sea: spring

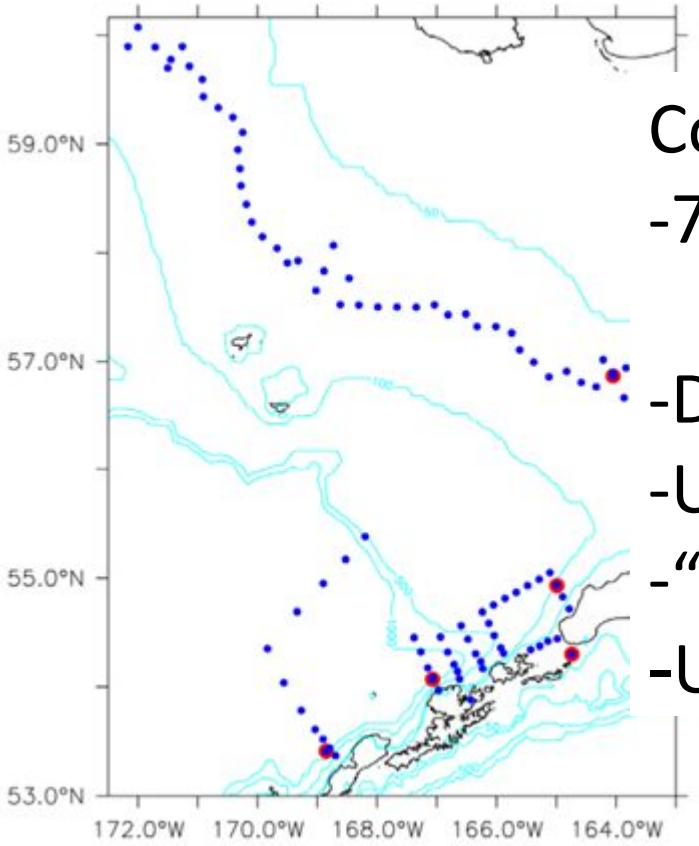
moorings

May, ≥1995, 2 wks

physics & zooplankton

larval fishes

May-Jun, ≥2001, even yrs, 2 wks, phys. & zoop.



Components:

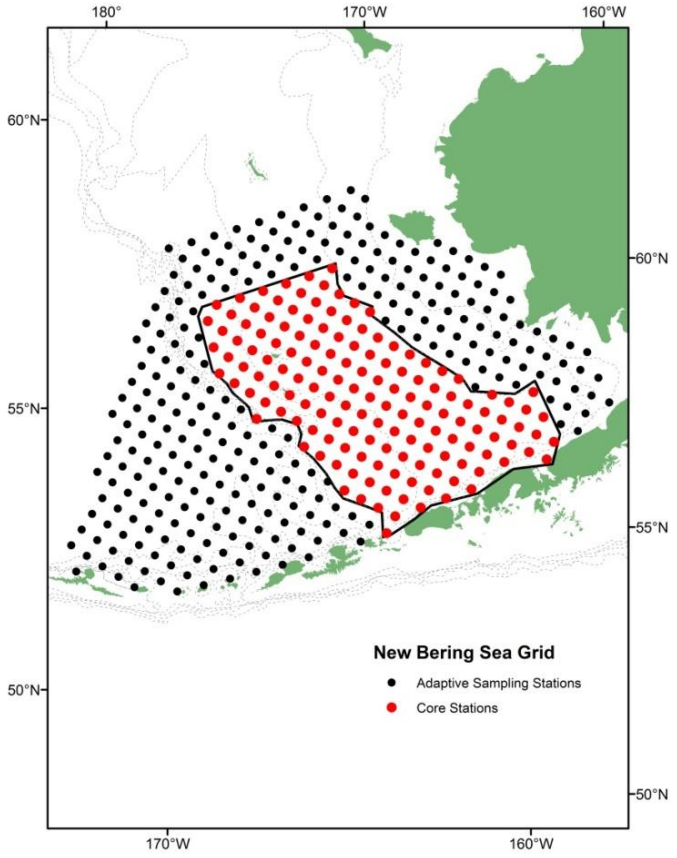
-70-m & moorings

-Dis. Bio. Obs.

-Unimak Box

-"Dog leg"

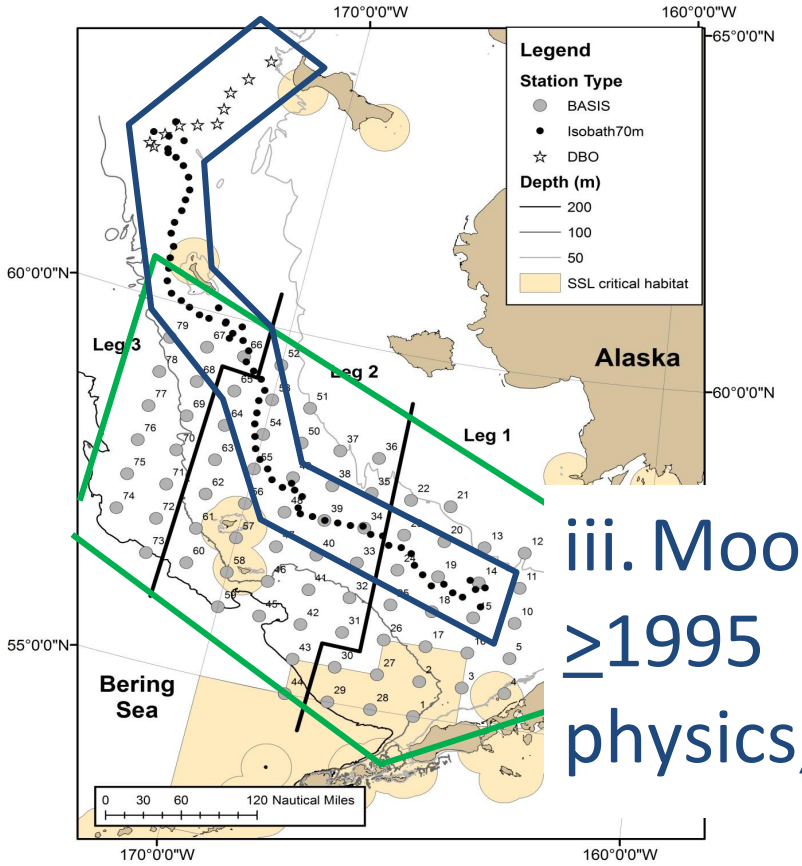
-Unimak Canyon



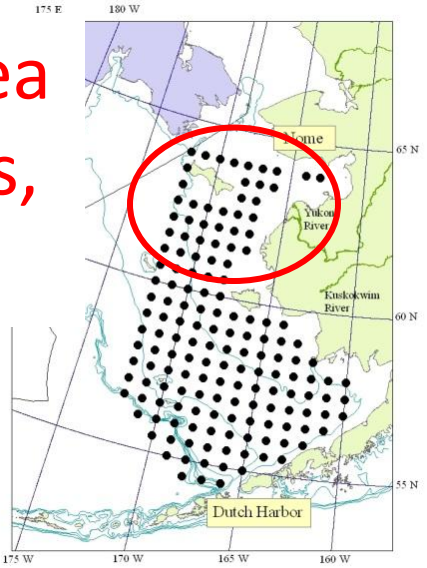
2b. Bering Sea: summer/fall

Aug-Oct, few weeks per project cruise

i. BASIS, ≥2002
now even years
phys., zoop., & neritic

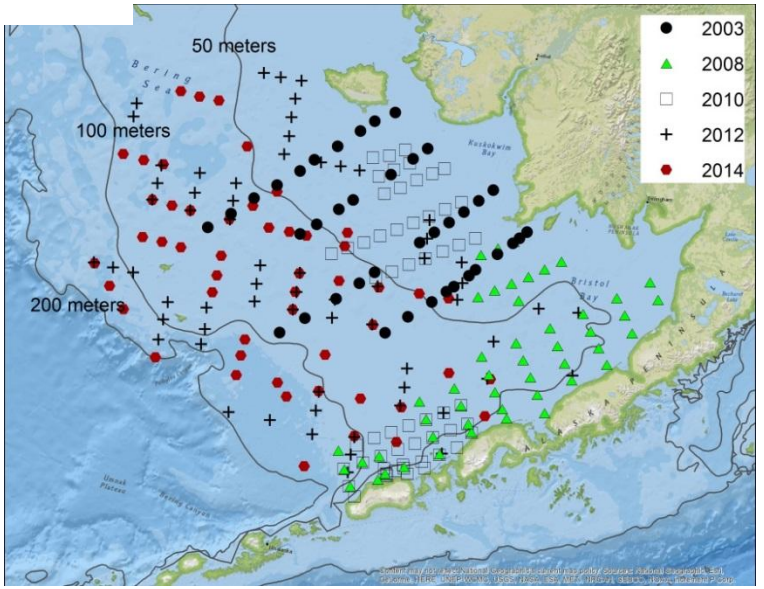


ii. N. Bering Sea
≥2002, physics,
zoop., & fish



and benthic
(≥2008) fishes

iii. Moorings, etc
≥1995
physics, zoop.



3a. Gulf of Alaska: spring

<u>western & central</u>

May-Jun ≥ 1970's

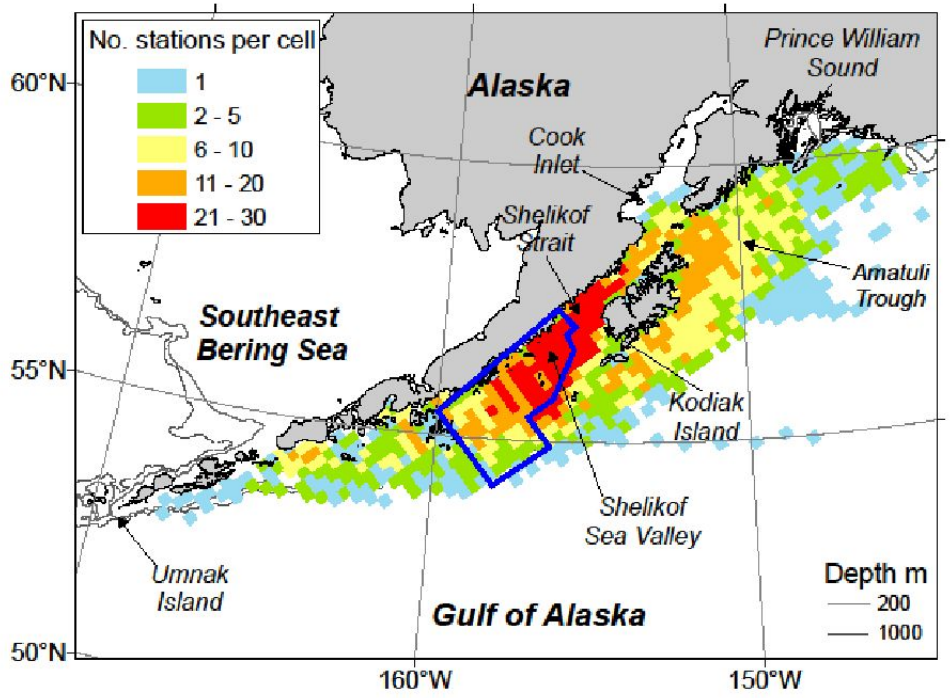
odd yrs, 2 wks, 10 nm apart, physics & zoop.

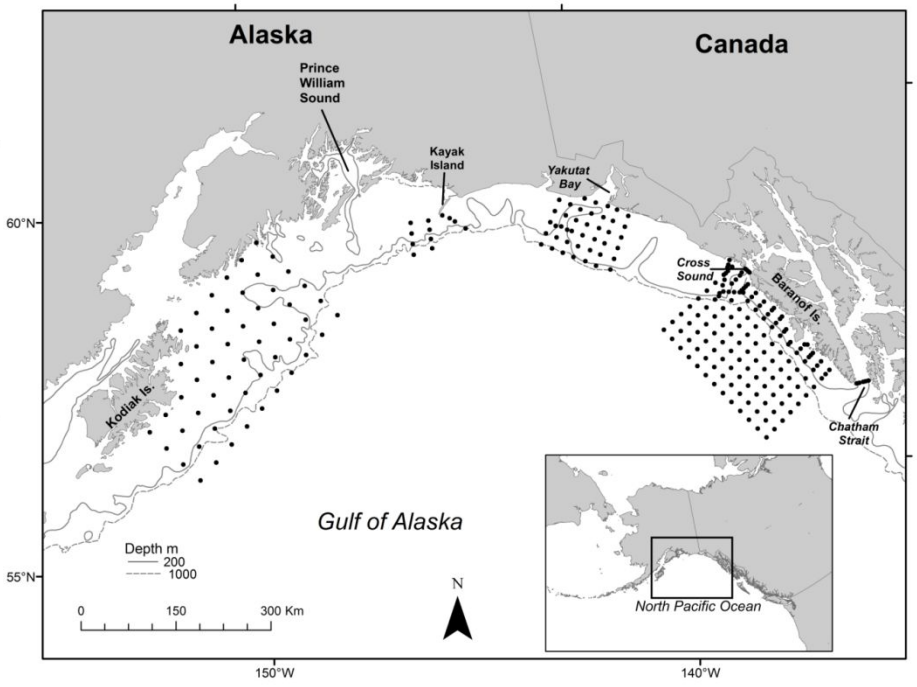
<u>central & eastern</u>

Apr-Aug 2011 & 2013

2 weeks

physics & zoop.





3b. Gulf of Alaska: summer/fall

<u>western & central</u>

Aug-Oct ≥2000

odd years, 4 wks

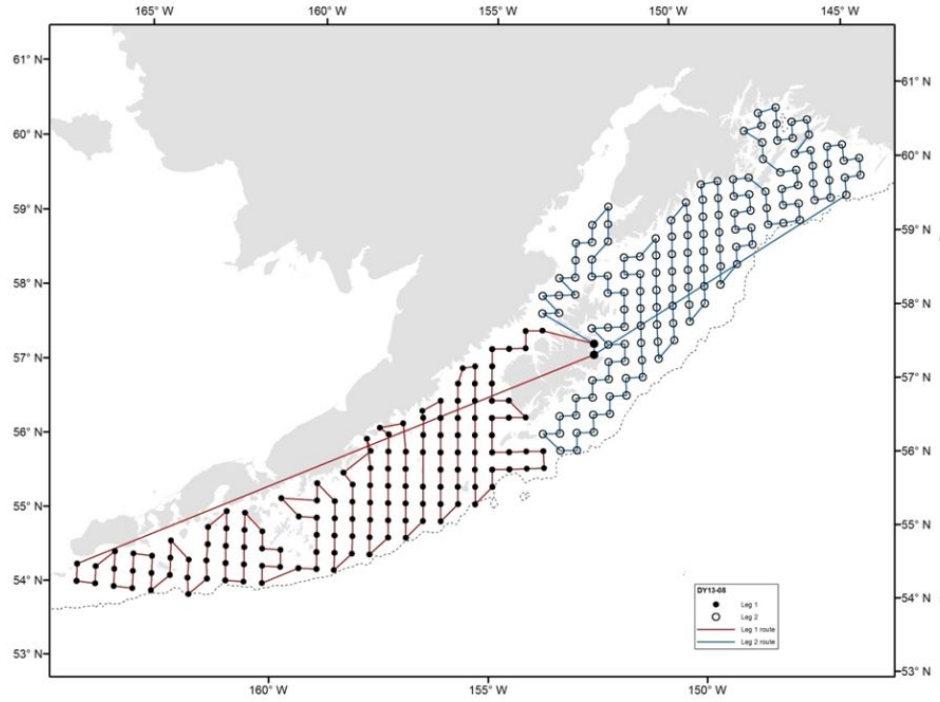
14 nm apart, physics, zooplankton, & fish

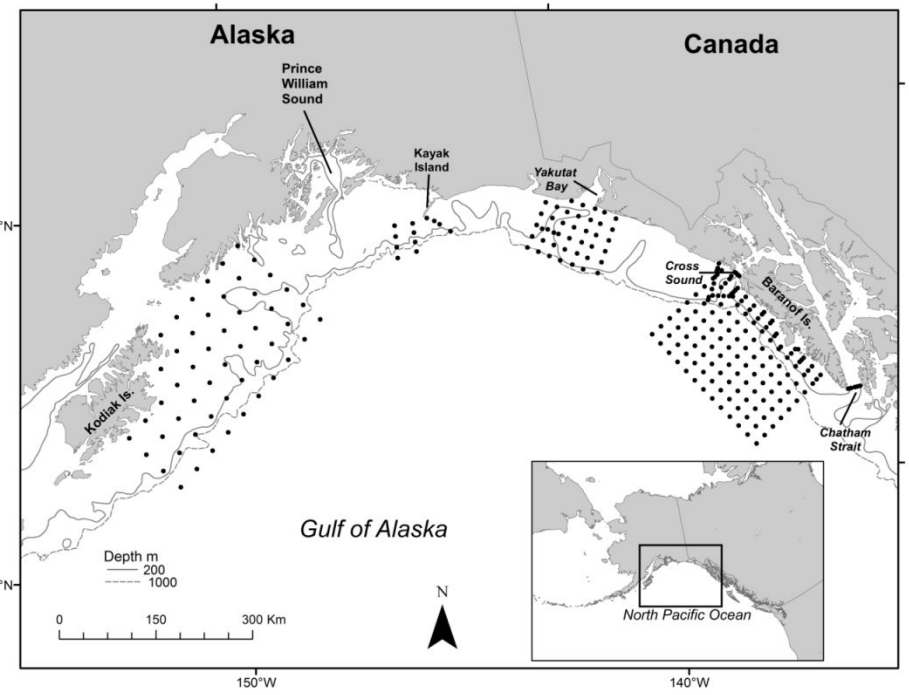
<u>central & eastern</u>

Jul-Aug & Sep-Oct ≥2011

odd years after 2017

4 weeks, physics, zooplankton, & fish

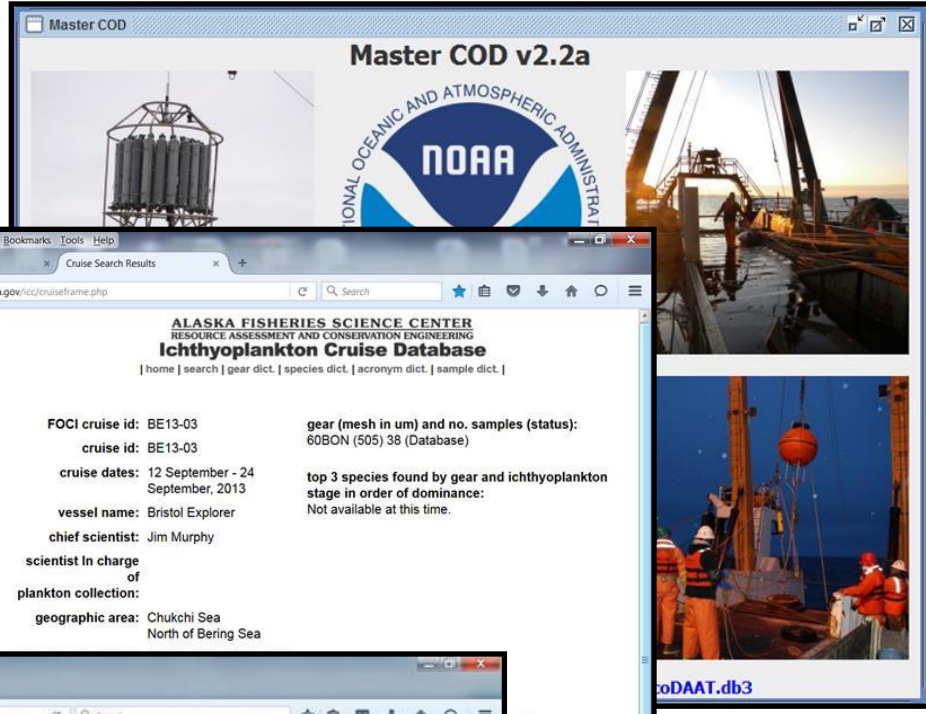


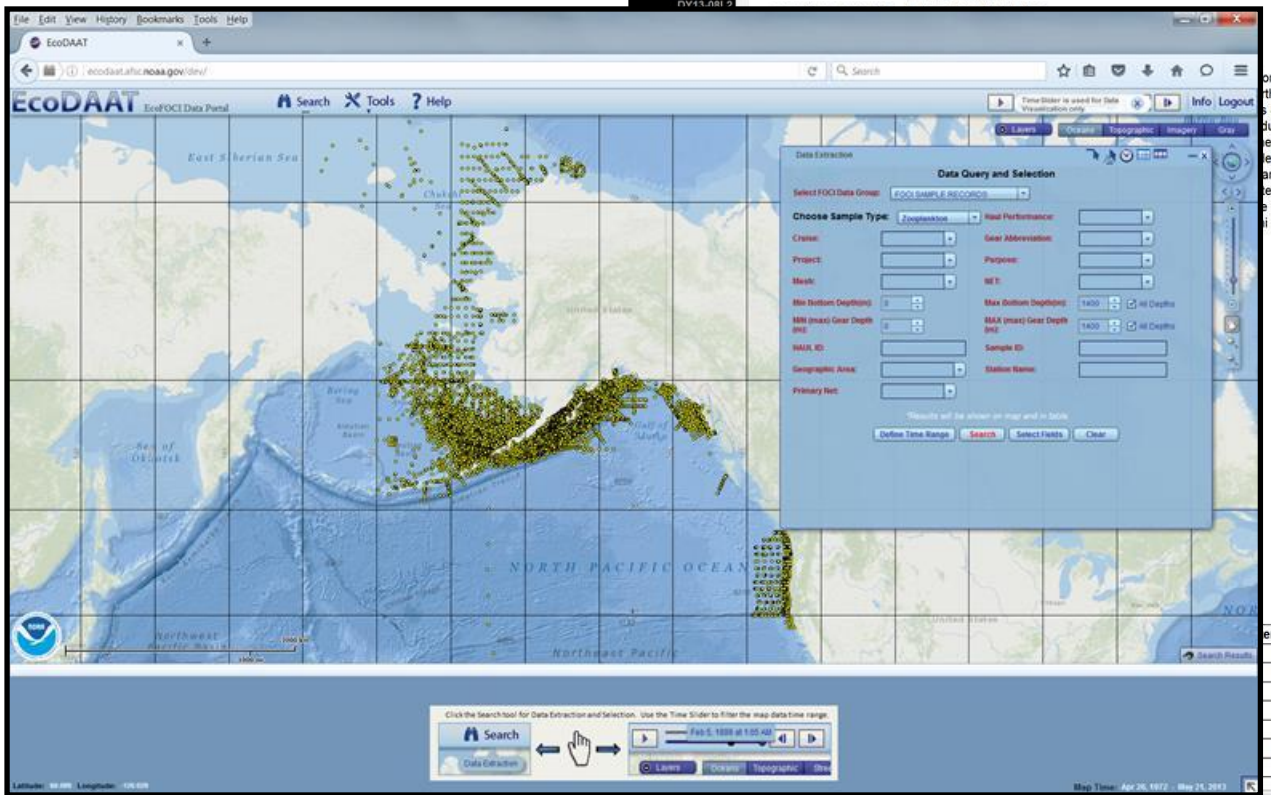


III. Status of ecosystem data

- Data management
- Web accessibility

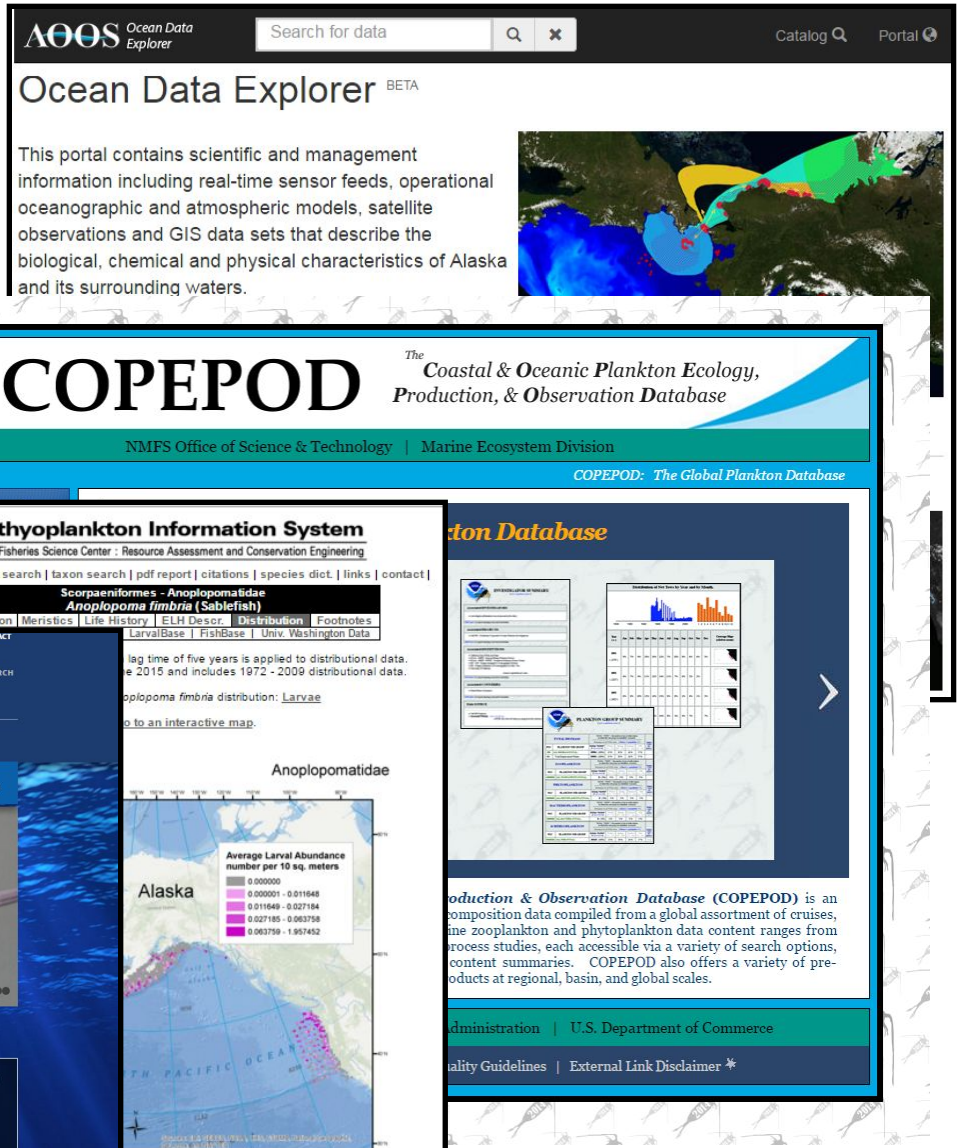
Data management





ernate station
NB-R04
NB-R03
NB-R02
NB-R01
NB-R00
NB-S00
NB-S01
NB-S02

Web access


AOOS Ocean Data Explorer
Search for data
Catalog
Portal
Ocean Data Explorer BETA
This portal contains scientific and management information including real-time sensor feeds, operational oceanographic and atmospheric models, satellite observations and GIS data sets that describe the biological, chemical and physical characteristics of Alaska and its surrounding waters.
COPEPOD
The Coastal & Oceanic Plankton Ecology, Production, & Observation Database
NMFS Office of Science & Technology | Marine Ecosystem Division
COPEPOD: The Global Plankton Database
Ichthyoplankton Information System
Alaska Fisheries Science Center : Resource Assessment and Conservation Engineering
Scorpaeniformes - Anoplopomatidae
Anoplopoma fimbria (Sablefish)
Anoplopomatidae
Alaska
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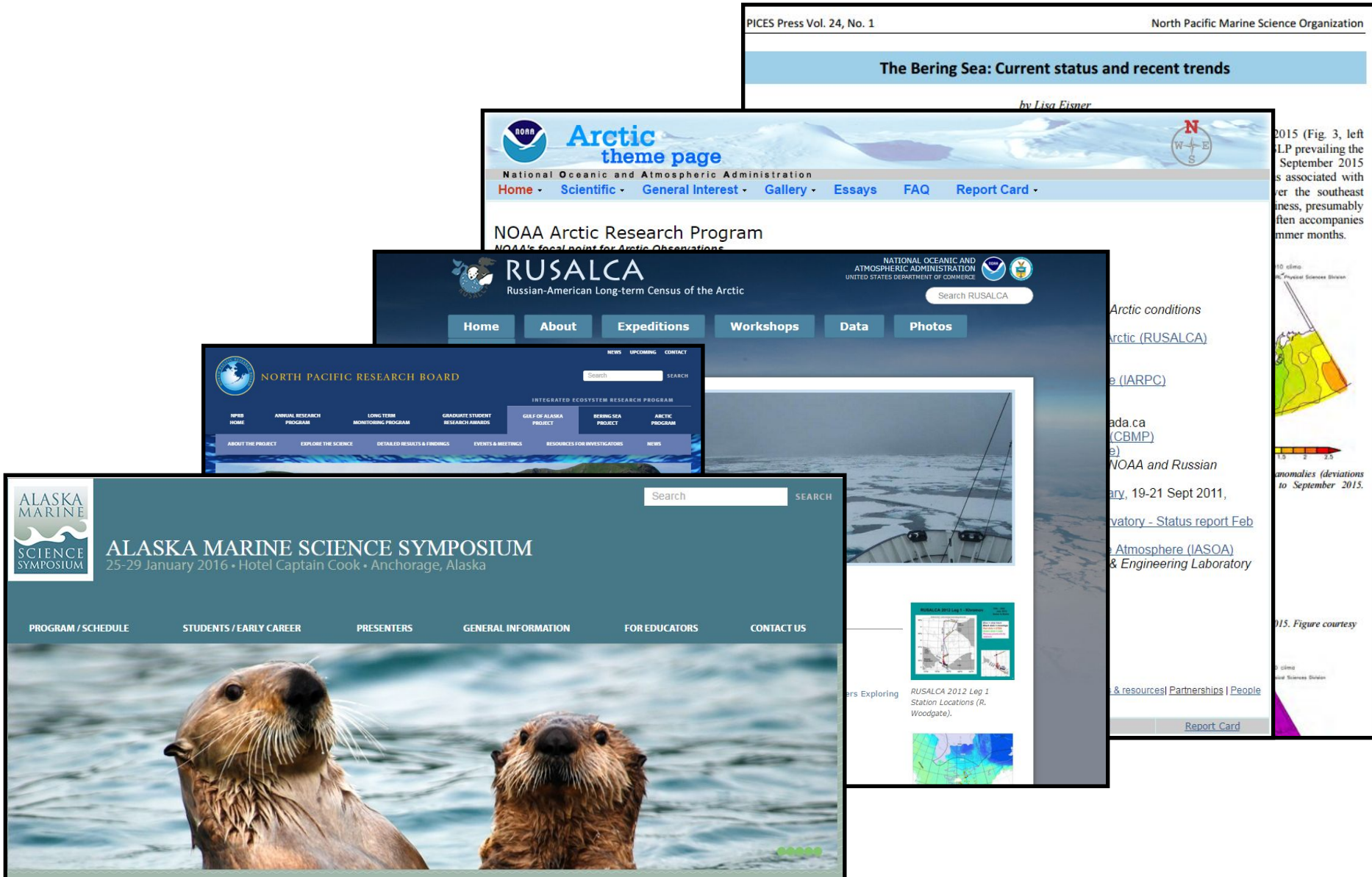
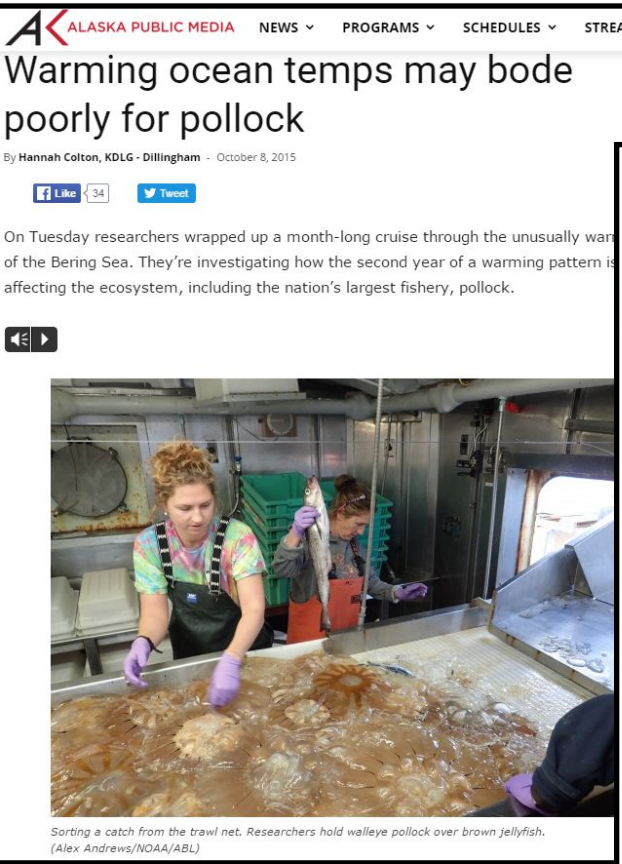
IV. Communication and use of ecosystem data

- Communication to managers, partners, stakeholders and the public
- Inclusion of ecosystem data into living marine resource management advice
- Peer-review of ecosystem-related science program and products

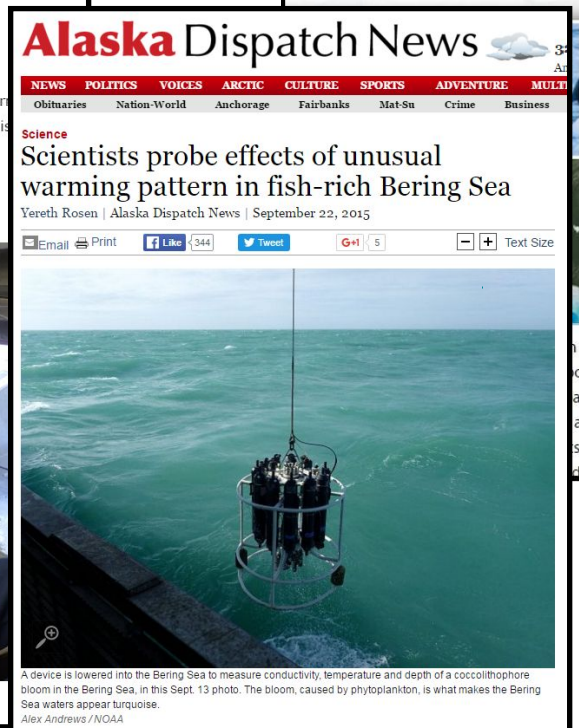
Communication to managers, partners, stakeholders and the public



Communication to managers, partners, stakeholders and the public

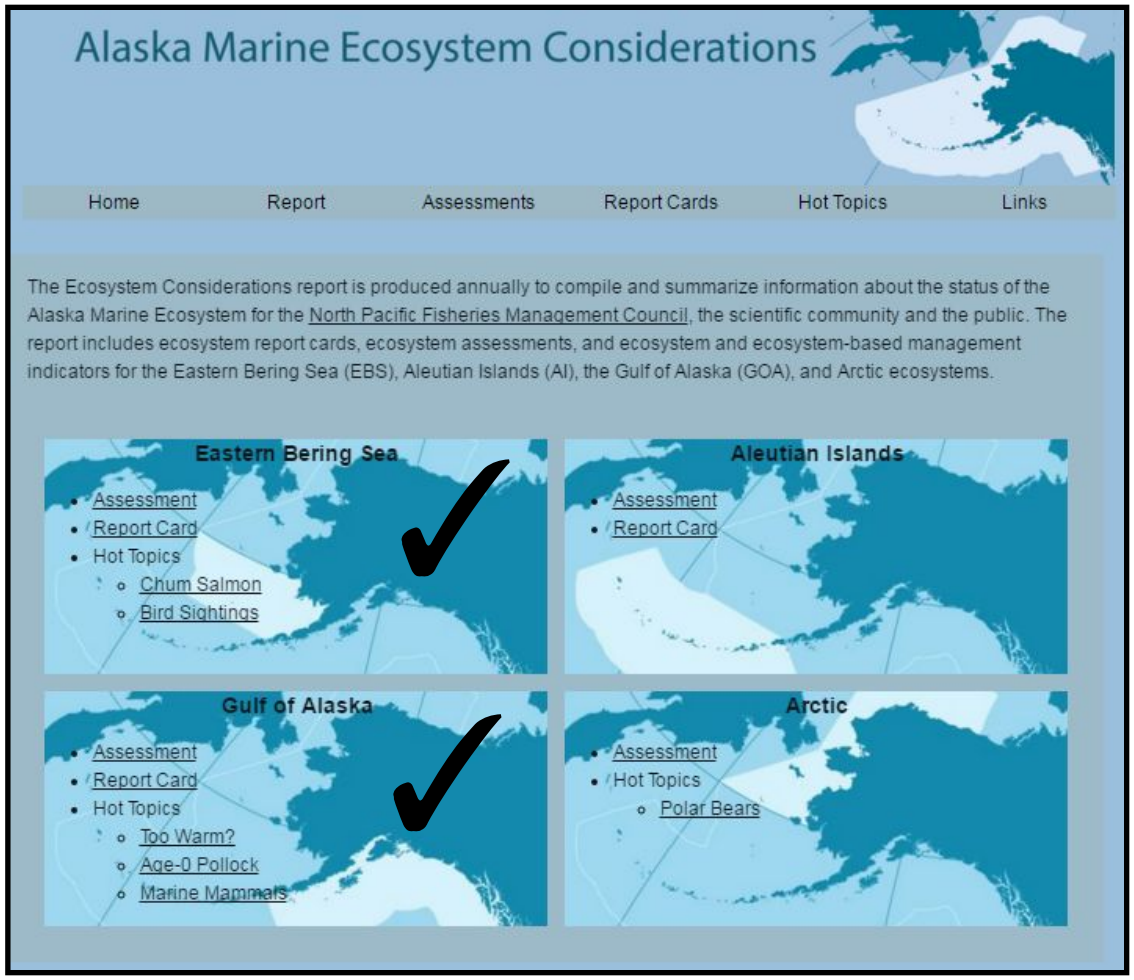


Sorting a catch from the trawl net. Researchers hold walleye pollock over brown jellyfish. (Alex Andrews/NOAA/ABL)



A device is lowered into the Bering Sea to measure conductivity, temperature and depth of a coccolithophore bloom in the Bering Sea, in this Sept. 13 photo. The bloom, caused by phytoplankton, is what makes the Bering Sea waters appear turquoise.
Alex Andrews / NOAA

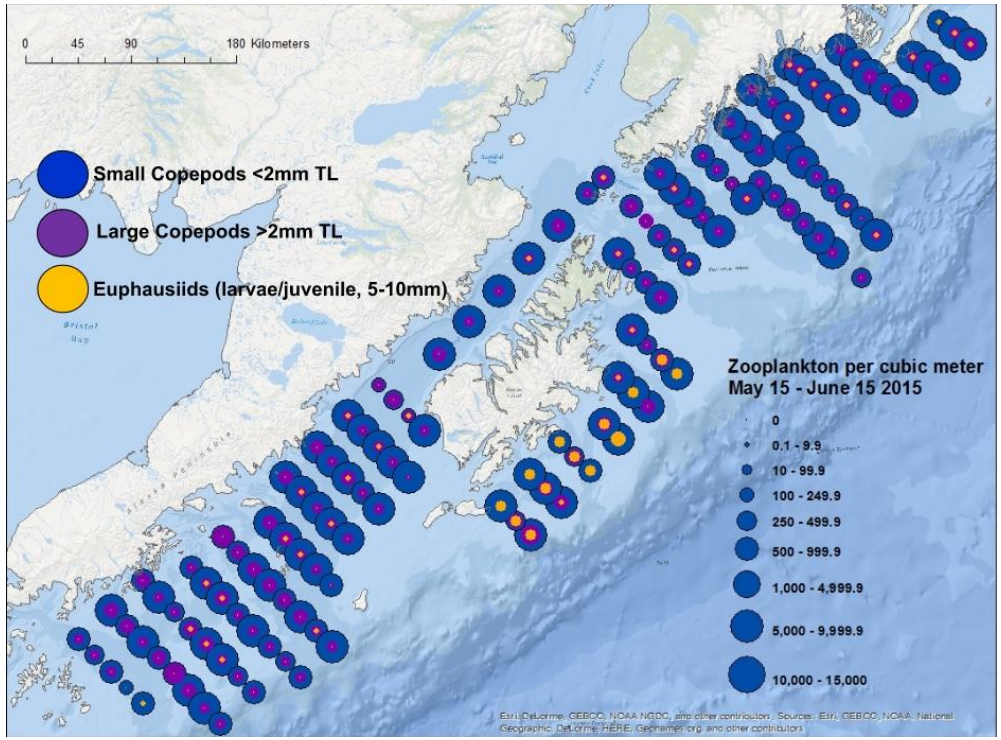
Inclusion of ecosystem data into management advice



How are these inclusions decided?

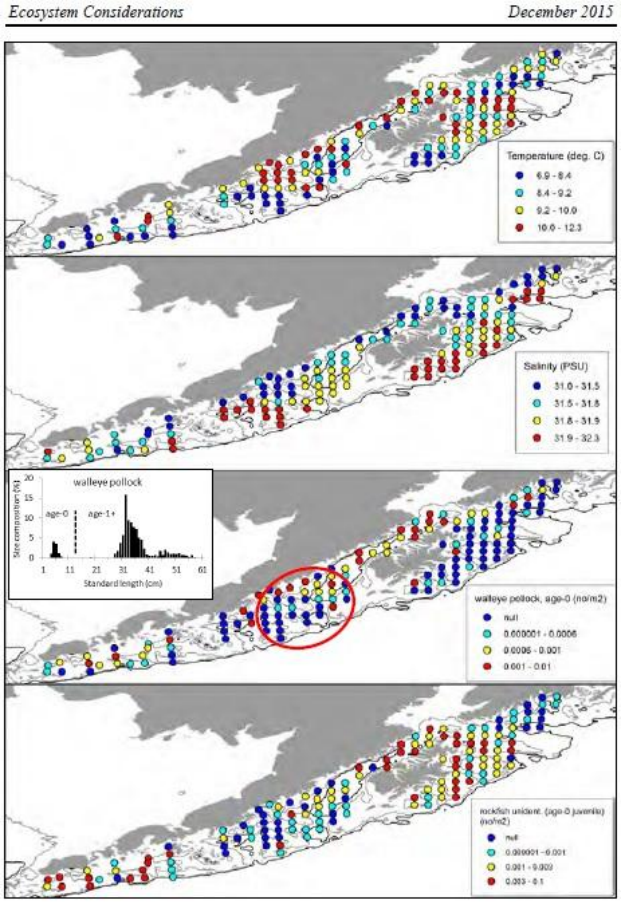
Requested during the management process:

eg., rapid zoop assessment



Offered for consideration during the research process:

eg., 2015 “Blob” response



Peer-review of ecosystem-related science program and products

NOAA FISHERIES

Center for Independent Experts Review for the Recruitment Processes Alliance Research in the Southeastern Bering Sea

July 21 – 24, 2015

NOAA Western Regional Center
Alaska Fisheries Science Center
Building 4
Traynor Seminar Room (Rm 2076)
7600 Sand Point Way NE
Seattle, WA 98115

Expert Panel:
Dr. J Simmonds, UK
Dr. K Drinkwater, IMR, NO
Dr. P Fernandes, IBES, UK
Dr. T Smith, CSIRO, AU